

D-407

THE PERKIN-ELMER CORPORATION

D407

Attachment (5)

Memorandum

December 3, 1959

TO:

FROM: R. M. Scott

SUBJECT: Coaxial Film SpoolsCC:

RECEIVED STAT

DEC 4 1959


PATENT DEPT.
THE PERKIN-ELMER CORP STAT

This memo supplies the information requested by in his memo to you on November 20th. STAT

As the performance requirements on aerial cameras move in the direction of higher and higher angular resolution, it becomes necessary to stabilize the camera against aircraft roll, pitch and yaw so that the angular motion of the camera may be kept very small during the exposure. In order that the torques required to provide such stabilization be kept small, it is necessary that the center of gravity of the entire camera structure be maintained at a point stationary to the respective structure. The principal source of center of gravity motion is the transport of film during the course of the mission from the supply spool to the take-up spool. In modern cameras the film weight often represents as much as 10% or 20% of the total camera weight so that a shift of its center of gravity has a profound effect on the center of gravity of the whole system. Several methods have been proposed to overcome this problem. The film spools have been mounted on a frame which is translated with respect to the rest of the camera structure as the film moves from one spool to the other. Alternately, two take-up and two supply spools have been used--half the film going in one direction and the other half moving in the other.

It occurred to me that this problem could be neatly solved if the supply spool and the take-up spool were coaxial. One spool might be of standard proportions with a rather small hub upon which the film is wound, while the other spool would be one with a very large hub sufficiently large, in fact, so as to permit mounting the small spool within it. While it is perfectly practical to remove film or add it to the outside diameter of the large spool, it becomes necessary to provide a mechanism which permits the film to make at least one right angle turn near the outside diameter of the inner spool. Thus the practicality of this suggestion depends on a solution to a problem covered in the November 20 memo.

The idea seems a simple and obvious one, but as far as I know has not been employed before.


R. M. Scott

RMS/sa